

## **Homeland Security's Science & Technology Directorate's 'Detect to Protect' program will assess trigger and confirmer sensors designed to detect biological agents within minutes**

Eurekaalert!

The idea that disease and infection might be used as weapons is truly dreadful, but there is plenty of evidence showing that biological weapons have been around since ancient times.\* Bioterrorism, as it is dubbed, is nothing new, and although medicines have made the world a safer place against a myriad of old scourges both natural and manmade, it still remains all too easy today to uncork a nasty cloud of germs.

The Department of Homeland Security's Science and Technology Directorate (DHS S&T) has scheduled a series of tests in the Boston subways to measure the real-world performance of new sensors recently developed to detect biological agents.

S&T's "Detect-to-Protect" (D2P) Bio Detection project is assessing several sensors (made by Flir Inc., Northrop Grumman, Menon and Associates, and Qinetiq North America) to alert authorities to the presence of biological material. These devices with "trigger" and "confirmer" sensors have been designed to identify and confirm the release of biological agents within minutes.

In 2009, and in early August this year, inert gasses were released in the Boston subway system in an initial study to determine where and how released particulates would travel through the subway network and to identify exactly where to place these new sensors. The current study will involve the release of a small amount of an innocuous killed bacterium in subway stations in the Boston area to test how well the sensors work. After the subway stations close, S&T scientists will spray small quantities of killed *Bacillus subtilis* in the subway tunnels. This common, food-grade bacterium is found everywhere in soil, water, air, and decomposing plant matter and, even when living, is considered nontoxic to humans, animals, and plants.

S&T's Dr. Anne Hultgren, manager of the D2P project, says, "While there is no known threat of a biological attack on subway systems in the United States, the S&T testing will help determine whether the new sensors can quickly detect biological agents in order to trigger a public safety response as quickly as possible."

DHS leads federal efforts to prepare for, respond to, and recover from a possible domestic biological attack. The testing will continue periodically for the next six months and will be monitored by the Massachusetts Bay Transportation Authority as well as state and local public health officials.

The particles released in the stations will dissipate quickly. But before they do, their

brief travels will provide invaluable data for DHS' ongoing effort to protect American travelers from potential hazards. Unlike the "Charlie on the MTA" made famous by the Kingston Trio folk group, these particles will NOT "...ride forever 'neath the streets of Boston."

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\*Some 26 centuries before five Americans died from anthrax-laced letters, enemy wells were poisoned with the lovely but poisonous flower hellebore, or a rye fungus; with one swig, an invading army would soon drift into delirium, and perhaps death. Medieval Europeans used the infected carcasses of animals and plague victims to contaminate enemy defensive positions. During the 18th century, blankets provided to Indians in the Americas loyal to the French were purposely infected with smallpox, a particularly gruesome disease, wiping out whole populations. Naturally occurring biological toxins, however, can also decimate entire populations. For centuries, hundreds of thousands fell victim to the Black Death and other plagues, such as smallpox, typhus, and typhoid, and in 1917 and 1918, an influenza outbreak killed 20 million worldwide.

Source: [http://www.eurekalert.org/pub\\_releases/2012-08/udoh-bss082412.php](http://www.eurekalert.org/pub_releases/2012-08/udoh-bss082412.php) [1]

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